WHAT WE CLAIM:

1. A composition comprising:

(a) at least one surfactant having a hydrophobic-lipophilic balance value in the range from about 11 to about 16; and

(b) at least one cell membrane altering compound.

2. The composition according to claim 1 wherein the surfactant is selected from the group consisting of non-ionic surfactants, cationic surfactants, and mixtures thereof.

3. The composition according to claim 2 wherein the surfactant is present in the composition in an amount ranging from about 0.001 to about 10% (w/v) of the composition.

4. The composition according to claim 2 wherein the non-ionic surfactants comprise ethoxylated alkylphenols.

5. The composition according to claim 4 wherein the ethoxylated akylphenols comprise ethoxylated nonylphenols or octylphenoxypolyethoxyethanol.

6. The composition according to claim 2 wherein the cationic surfactants comprise ethylene oxide condensates of aliphatic amines or ethoxylated tallow amines.

7. The composition according to claim 1 wherein the surfactant comprises an ethoxylated amine.

8. The composition according to claim 1 wherein the surfactant is selected from the group consisting of Tomah E-18-5, Tomah E-18-15, Rhodameen VP 532/SPB, Trymeen 6607, Triton X-100.

9. The composition according to claim 1 wherein the cell membrane altering compound is present in the composition in an amount effective to substantially lyse or cause pore formation in cell membranes or walls.

10. The composition according to claim 1 wherein the cell membrane altering compound inhibits phospholipid sensitive Ca +2 dependent protein kinase and attacks cell membranes.

11. The composition according to claim 1 wherein the cell membrane altering compound alters membrane permeability or disrupts membranes.

12. The composition according to claim 1, wherein the cell membrane altering compound comprises polymyxin-beta-nonapeptide (PMBN), alkylglycoside or alkylthioglycoside, betaine detergent, quarternary ammonium salt, amine, lysine polymers, magainin, melittin, phospholipase A_2 or phospholipase A_2 activating peptide (PLAP).

13. The composition according to claim 1 wherein the cell membrane altering compound is an antibiotic.

14. The composition according to claim 13 wherein the cell membrane altering compound comprises a polymyxin B sulfate or vancomycin.

15. The composition according to claim 13 wherein the cell membrane altering compound comprises a mixture of polymyxin B1 and polymyxin B2.

16. The composition according to claim 12 wherein the cell membrane altering compound comprises an alkylglycoside or an alkylthioglycoside.

17. The composition according to claim 16, wherein the cell membrane altering compound comprises octyl thioglucoside.

18. The composition according to claim 17, wherein the octyl thioglucoside is present at a final concentration of at least 0.4%, and less than 1% (w/v).

19. The composition according to claim 18, wherein the octyl thioglucoside is present at a final concentration of between 0.4% and 0.6% (w/v).

20. The composition according to claim 1, further comprising a buffer salt.

21. The composition according to claim 20, wherein the buffer salt is present in an amount sufficient to maintain a pH range from about 6.5 to about 9.0.

22. The composition according to claim 1, further comprising a defoaming agent.

23. The composition according to claim 1, further comprising an agent to reduce non-specific binding of non-affinity labeled proteins.

24. The composition according to claim 1, further comprising a lysozyme.

25. The composition according to claim 1, wherein the composition is in a form of an aqueous solution.

26. The composition according to claim 25, wherein the solution is a concentrate.

27. The composition according to claim 23, further comprising a buffer salt in an amount sufficient to maintain a pH range from about 6.5 to about 9.0.

28. The composition according to claim 27 comprising Tomah E-18-15, Triton X100, and octyl beta thioglucopyranoside.

29. The composition according to claim 1 comprising 2% Tomah E-18-15, 2% Triton X100, and 6% octyl beta thioglucopyranoside in 500 mM HEPES (pH 7.5).

30. A method for recovering proteins or peptides from host cells comprising the steps of:

providing a source of cells having a desired protein or peptide;

providing a composition comprising at least one surfactant having a hydrophobic- lipophilic balance value in the range from about 11 to about 16 and at least one cell membrane altering compound; and

contacting the cells with the composition in an amount effective to effect lysis of the cell and subsequent release of the protein or peptide.

31. The method according to claim 30, further comprising the step of separating the released protein or peptide.

32. The method according to claim 31, further comprising the step of contacting the released protein or peptide with a substrate that binds the released protein or peptide.

33. The method according to claim 32, wherein the substrate comprises a magnetic or non-magnetic resin.

34. The method according to claim 30, wherein the composition further comprises lysozyme.

35. The method according to claim 30, wherein the cells comprise prokaryotic or eucaryotic cells.

36. The method according to claim 35 wherein the cells comprise bacterial, yeast, insect or plant cells.

37. The method according to claim 30 wherein the cells are in the form of a cell culture or a pellet.

38. The method according to claim 30 wherein the surfactant is selected from the group consisting of non-ionic surfactants, cationic surfactants, and mixtures thereof.

39. The method according to claim 38 wherein the surfactant is present in an amount ranging from about 0.001 to about 10% (w/v) of the composition.

40. The method according to claim 38 wherein the non-ionic surfactants comprise ethoxylated alkylphenols.

41. The method according to claim 40 wherein the ethoxylated akylphenols comprise ethoxylated nonylphenols or octylphenoxypolyethoxyethanol.

42. The method according to claim 38 wherein the cationic surfactant comprise ethylene oxide condensates of alphatic amines or ethoxylated tallow amines.

43. The method according to claim 30 wherein the surfactant comprises an ethoxylated amine.

44. The method according to claim 30, wherein the surfactant comprises one or more compounds selected from the group consisting of Tomah E-18-5, Tomah E-18-15, Rhodameen VP 532/SPB, Trymeen 6607, Triton X-100.

45. The method according to claim 30 wherein the cell membrane altering compound is present in an amount effective to substantially lyse or cause pore formation in cell membranes or walls.

46. The method according to claim 30, wherein the cell membrane altering compound comprises polymyxin-beta-nonapeptide (PMBN), alkylglycoside or alkylthioglycoside, betaine detergent, quarternary ammonium salt, amines, lysine polymers, magainin, melittin, phospholipase A_2 or phospholipase A_2 activating peptide (PLAP).

47. The method according to claim 30 wherein the cell membrane compound inhibits phospholipid sensitive Ca +2 dependent protein kinase and attacks cell membranes.

48. The method according to claim 30 wherein the cell membrane altering compound is an antibiotic.

49. The method according to claim 48 wherein the cell membrane altering compound comprises a polymyxin B sulfate or vancomycin.

50. The method according to claim 48 wherein the cell membrane altering compound comprises a mixture of polymyxin B1 and polymyxin B2.

51. The method according to claim 46 wherein the cell membrane altering compound comprises an alkylglycoside or an alkylthioglycoside.

52. The method according to claim 51, wherein the cell membrane altering compound comprises octyl thioglucoside.

53. The method according to claim 52, wherein the octyl thioglucoside is present at a final concentration of at least 0.4%, and less than 1% (w/v).

54. The method according to claim 53, wherein the octyl thioglucoside is present at a final concentration of between 0.4% and 0.6% (w/v).

55. The method according to claim 30, the composition further comprising a buffer salt.

56. The method according to claim 55, wherein the buffer salt is present in an amount sufficient to maintain a pH range from about 6.5 to about 9.0.

57. The method according to claim 30, wherein the composition further comprising a defoaming agent.

58. The method according to claim 57, wherein the composition further comprises an agent to reduce non-specific binding of non-affinity labeled proteins.

59. The method according to claim 30, wherein the composition further comprises a lysozyme.

60. The method according to claim 30 wherein the composition comprises Tomah E-18-15, Triton X100, and octyl beta thioglucopyranoside.

61. The method according to claim 30 wherein the composition comprises 2% Tomah E-18-15, 2% Triton X100, and 6% octyl beta thioglucopyranoside in 500 mM HEPES (pH 7.5).

62. A method for recovering proteins or peptides from host cells comprising the steps of:

providing a source of cells having a desired protein or peptide;

providing a composition comprising at least one surfactant having a hydrophobic- lipophilic balance value in the range from about 11 to about 16 and at least one cell membrane altering compound;

providing a substrate for binding the protein or peptide;

contacting the cells with the composition in an amount effective to effect lysis of the cell and release of the protein or peptide;

contacting the released protein or peptide with the substrate under conditions effective for binding the release protein with the substrate;

washing the protein or peptide bound to the substrate; and

recovering the protein or peptide bound to the substrate.

63. An apparatus for extracting and isolating a protein or peptide comprising:

a housing for holding one or more samples having a protein or peptide;

a composition comprising at least one surfactant having a hydrophobic-lipophilic balance value in the range from about 11 to about 16; and at least one cell membrane altering compound; and

a substrate that binds the protein or peptide.

64. The apparatus of claim 63 wherein the housing comprises a container, a column, or a multi-well plate.

65. The apparatus of claim 63 wherein the substrate comprises a chromatographic resin or membrane.

66. The apparatus of claim 65 wherein the chromatographic resin is magnetic.

67. A kit for isolating proteins or peptides comprising the apparatus of claim 63.

68. A kit comprising:

at least one surfactant having a hydrophobic-lipophilic balance value in the range from about 11 to about 16;

at least one cell membrane altering compound; and

directions for using the kit.

69. The kit according to claim 68 wherein the surfactant and cell membrane altering compound are in a composition. .

70. The kit according to claim 69 wherein the composition includes water.

71. The kit according to claim 70, wherein the aqueous composition is in the form of a concentrate.

72. The kit according claim 68, further comprising a buffer.

73. The kit according to claim 68, further comprising lysozyme.

74. The kit according to claim 68, further comprising one or more washing buffers.

75. The kit according to claim 68, further comprising one or more elution buffers.

76. The kit according to claim 68, further comprising a substrate for binding proteins or peptides.

77. The kit according to claim 76, wherein the substrate comprises a magnetic or non-magnetic chromatographic resin.

78. The kit according to claim 68, wherein said kit is used for the recovering proteins or peptides from host cells, for detecting for the presence or absence of a target protein or peptide, or for preparing cell extracts.

79. The kit according to claim 68, further comprising means for detecting or quantifying the amount of protein or peptide present in the sample.

80. A high throughput method for recovering proteins or peptides from host cells comprising the steps of

providing one or more sources of cells having a desired protein or peptide;

providing a composition comprising at least one surfactant having a hydrophobic-lipophilic balance value in the range from about 11 to about 16 and at least one cell membrane altering compound; and

contacting each source of cells with the composition in an amount effective to effect lysis of the cells and subsequent release of the protein or peptide.

81. The method according to claim 80, further comprising the step of separating the released protein or peptide from each source cell.

82. The method according to claim 81, wherein said step is performed by contacting the released protein or peptide with a substrate that binds to some or all of the release protein or peptide.

83. The method according claim 82, wherein the substrate comprises a magnetic or non-magnetic resin.

84. The method of claim 81, further comprising measuring the activity or binding of the released protein or peptide.

85. A high throughput method for recovering proteins or peptides from host cells comprising the steps of

providing one or more source of cells having a desired protein or peptide;

providing a composition comprising at least one surfactant having a hydrophobic-lipophilic balance value in the range from about 11 to about 16 and at least one cell membrane altering compound;

providing one or more substrates for binding the protein or peptide;

contacting each source of cells separately with the composition in an amount effective to effect lysis of the cell and subsequent release of the protein or peptide;

contacting the released protein or peptide from each source of cells with the substrate under conditions effective for binding some or all of the released protein with the substrate;

washing the protein bound to the substrate; and

recovering the protein bound to the substrate.

86. The method according to claim 85, wherein the substrate comprises a magnetic or non-magnetic resin.

87. The method according to claim 85, further comprising the step of measuring the activity or binding of the released protein or peptide.

88. A high throughput method for screening a library of proteins or peptides from sources of host cells, each source of host cell having a vector that encodes a protein or peptide member of the library , the method comprising the steps of:

providing a library of proteins or peptides from sources of host cells, each source of host cells having a vector that encodes a protein or peptide of the library;

providing a composition comprising at least one surfactant having a hydrophobic-lipophilic balance value in the range from about 11 to about 16 and at least one cell membrane altering compound;

providing one or more substrates for binding the protein or peptide;

contacting each source of cells with the composition in an amount effective to effect lysis of the cell and subsequently release of the protein or peptide;

contacting the released protein or peptide from each source of cells with the substrate under conditions effective for binding some or all of the released protein or peptide with the substrate;

washing the protein or peptide bound to the substrate; and

recovering the protein or peptide bound to the substrate.

89. The method according to claim 88, wherein the protein or peptides are mutants of a particular protein or peptide of interest.

90. The method according to claim 89, further comprising the step of measuring the activity or binding properties of the protein or peptide.

91. The method according to any one of claims 80, 85 or 88 wherein the composition comprises Tomah E-18-15, Triton X100, and octyl beta thioglucopyranoside.

92. The method according to claim 80, 85, or 88 wherein the composition comprises 2% Tomah E-18-15, 2% Triton X100, and 6% octyl beta thioglucopyranoside in 500 mM HEPES (pH 7.5).

93. A method for producing a cell extract from cultured cells without harvesting the cells from culture medium, the method comprising contacting the cell medium with an amount of composition effective to lyse the cells, the composition comprising

(a) at least one surfactant having a hydrophobic-lipophilic balance value in the range from about 11 to about 16; and

(b) at least one cell membrane altering compound.

94. The composition according to claim 93 wherein the surfactant is selected from the group consisting of non-ionic surfactants, cationic surfactants, and mixtures thereof.

95. The composition according to claim 94 wherein the surfactant is present in the composition in an amount ranging from about 0.001 to about 10% (w/v) of the composition.

96. The composition according to claim 94 wherein the non-ionic surfactants comprise ethoxylated alkylphenols.

97. The composition according to claim 96 wherein the ethoxylated akylphenols comprise ethoxylated nonylphenols or octylphenoxypolyethoxyethanol.

98. The composition according to claim 94 wherein the cationic surfactants comprise ethylene oxide condensates of aliphatic amines or ethoxylated tallow amines.

99. The composition according to claim 93 wherein the surfactant comprises an ethoxylated amine.

100. The composition according to claim 93 wherein the surfactant is selected from the group consisting of Tomah E-18-5, Tomah E-18-15, Rhodameen VP 532/SPB, Trymeen 6607, Triton X-100.

101. The composition according to claim 93 wherein the cell membrane altering compound is present in the composition in an amount effective to substantially lyse or cause pore formation in cell membranes or walls.

102. The composition according to claim 93 wherein the cell membrane altering compound inhibits phospholipid sensitive Ca +2 dependent protein kinase and attacks cell membranes.

103. The composition according to claim 93 wherein the cell membrane altering compound alters membrane permeability or disrupts membranes.

104. The method according to claim 93, wherein the cell membrane altering compound comprises polymyxin-beta-nonapeptide (PMBN), alkylglycoside or alkylthioglycoside, betaine detergent, quarternary ammonium salt, amine, lysine polymers, magainin, melittin, phospholipase A_2 or phospholipase A_2 activating peptide (PLAP).

105. The composition according to claim 93 wherein the cell membrane altering compound is an antibiotic.

106. The composition according to claim 105 wherein the cell membrane altering compound comprises a polymyxin B sulfate or vancomycin.

107. The composition according to claim 105 wherein the cell membrane altering compound comprises a mixture of polymyxin B1 and polymyxin B2.

108. The composition according to claim 104 wherein the cell membrane altering compound comprises an alkylglycoside or an alkylthioglycoside.

109. The composition according to claim 108, wherein the cell membrane altering compound comprises octyl thioglucoside.

110. The composition according to claim 109, wherein the octyl thioglucoside is present at a final concentration of at least 0.4%, and less than 1% (w/v).

111. The composition according to claim 110, wherein the octyl thioglucoside is present at a final concentration of between 0.4% and 0.6% (w/v).

112. The composition according to claim 93, further comprising a buffer salt.

113. The composition according to claim 112, wherein the buffer salt is present in an amount sufficient to maintain a pH range from about 6.5 to about 9.0.

114. The composition according to claim 93, further comprising a defoaming agent.

115. The composition according to claim 93, further comprising an agent to reduce non-specific binding of non-affinity labeled proteins.

116. The composition according to claim 93, further comprising a lysozyme.

117. The composition according to claim 93, wherein the composition is in a form of an aqueous solution.

118. The composition according to claim 117, wherein the solution is a concentrate.

119. The composition according to claim 115, further comprising a buffer salt in an amount sufficient to maintain a pH range from about 6.5 to about 9.0.

120. The composition according to claim 119 comprising Tomah E-18-15, Triton X100, and octyl beta thioglucopyranoside.

121. The composition according to claim 93 comprising 2% Tomah E-18-15, 2% Triton X100, and 6% octyl beta thioglucopyranoside in 500 mM HEPES (pH 7.5).